The method of determining the effective temperature, which may briefly be called the accumulated temperature, is fully explained in a paper by General Strachey, which will appear in the forthcoming volume of the "Quarterly Weather Report," that for 1878. Meanwhile it is extremely interesting to examine the diagrams in the Annexe somewhat minutely, and to observe how the total accumulated temperature, say, up to July 1, is made up in very different ways in the two years, 1881 and 1884, there exhibited.

The year 1881 was very cold in the winter, and its accumulated temperature was made up in the spring and early summer. In the present year we had practically no frost, but then we had unusually cold weather at Easter and at the end of May.

The practical application of the data thus obtained as standards of comparison for the growth and ripening of various agricultural products must of course be left to the agriculturists, and it will be interesting to learn how far a correspondence between the character of the several crops and the accumulated temperature of the year can be established.

The measure of temperature afforded by this system of computation appears to be as well suited to supply a standard of comparison of climates for hygienic purposes as for agriculture, and the diagrams indicate in a forcible manner the characteristic differences of climate, in respect of temperature, of the portions our islands to which they refer.

Mr. William Marriott read a paper on "Some Occasional Winds and their Influence on Health." After referring briefly to the causes of winds, Mr. Marriott spoke of the East wind, the Mistral, the Sirocco, and other well-known occasional winds. Of the East wind, Mr. Marriott said it was the most dreaded in this country. It is usually dry, cold, and very penetrating, and is well described in the old saying—

"When the wind is in the East
'Tis neither good for man nor beast."

Dr. Arthur Mitchell, in a "Note on the Weather of 1867, and on some effects of East winds," says, "Such winds blowing over a moist surface, like that, for instance, of the human body, tend to reduce the temperature of that surface to the temperature of evaporation, which in this case is much below that of the air itself. In licking up the moisture — that is, in causing its evaporation — a large amount of heat is rendered latent. This heat must be taken from something, and, in point of fact, our bodies are, and must be, atmost its entire source. A cold and dry wind, therefore, cools the surface of our bodies, not simply by enveloping them in a cool medium, and warming itself by conduction at their expense. It does this of course; but, being dry as well as cold, it does it with less activity than it would if moist and cold—damp air being a better conductor than dry air. It is chiefly, however, by the other mode that dry cold winds abstract heat from our bodies,—that is, by using their heat in the conversion of moisture into vapour. The heat so used becomes latent, and is for the time being lost. It does not raise the temperature of the air in immediate contact with the body. On the contrary, that air itself, low as its temperature may be, gives up some of its heat to become latent in the vaporised moisture, and probably gives up more than it gains from our bodies by conduction, so that the temperature of the film of air actually in contact with our bodies may be, and probably is, a little lower than the temperature of the bulk. The quantity of heat which our bodies lose in this way is far from insignificant, and the loss cannot be sustained without involving extensive and important physiological actions, and without influencing the state of health. In feeble and delicate constitutions, the resources of nature prove insufficient to meet the demand made on them, and a condition of disease then ensues." —(*Journal* of the Scottish Meteorological Society, vol. ii. p. 80.)

SCIENTIFIC SERIALS

Proceedings of the Linnean Society of New South Wales, vol. viii. part iv. contains:—Occasional notes on plants indigenous in the neighbourhood of Sydney, by E. Haviland.—Temperature of the body of *Echidna hystrix*, by N. de Miklouho-Maclay.—Plagiostomata of the Pacific, part 2, by N. de Miklouho-Maclay and W. Macleay, F.L.S.—Notes on some reptiles of the Herbert River, by W. Macleay, F.L.S.—Notes on some customs of the aborigines of the Albert district, by C. S. Wilkinson, F.G.S., F.L.S.—On the brain of Grey's whale, by W. A. Haswell, M.A., B.Sc.—On a new genus of fish from Port Jackson, by W. Macleay, F.L.S.—Fishes from the South Sea Islands, by Charles De Vis, M.A.—Some results of trawl-fishing outside Port Jackson, by W. Macleay, F.L.S.—The "Barometro Araucano" from the Chiloe Islands, by N. de Miklouho-Maclay.—Far southern localities of New South Wales plants, by Baron Sir F. von Müller, K.C.M.G., F.R.S.—Description of Australian Micro-lepidoptera, part 10, by E. Meyrick, B.A.—Notes on the geology of the southern portion of the Clarence River basin, by Prof. Stephens, M.A.—Dimensions of some gigantic land-tortoises, by J. C. Cox, M.D., F.L.S.

THE *Zeitschrift für wissenschaftliche Zoologie*, vol. xl. part 1, contains:—P. M. Fischer, upon the structure of *Opisthotrema cochleare*, nov. genus et spec.: a contribution to the anatomy of the Trematoda.—F. Blochmann, remarks upon some Flagellates.—A. Korotneff, the budding of Anchinia.—L. Döderlein, studies of Japanese Lithistidæ.—J. Brock, the male of *Sepioloidea lineolata*, d'Orb. (*Sepiola lineolata*, Quoy and Gaim), with general remarks upon the family of Sepioladæ.—A. Gruber, upon the nucleus and nuclear-fission in the Protozoa.—O. E. Imhof, results of a study of the pelagic fauna of the Swiss fresh-water lakes and tarns.

Part 2 contains:—A. Kölliker, the embryonic germinal layers and tissues (with a postscript).—C. R. Hoffmann, contribution to the history of the development of reptiles.—P. Langerhans, the worm-fauna of Madeira.—F. Ahlborn, (1) upon the origin and exit of the cerebral nerves in Petromyzon; (2) upon the segmentation of the body in Vertebrates; (3) upon the importance of the pineal gland (conarium, epiphysis cerebri).—C. Emery, study of *Luciola italica*, L.

THE *Morphologisches Jahrbuch*, vol. ix. part 3, contains the following:—G. Ruge, contributions to the study of the hæmal system in man.—J. E. V. Boas, a contribution to the morphology of the nails, claws, and hoofs of the Mammalia.—M. Davidoff, on the variations of the plexus lumbosacralis of *Salamandra maculosa*.—O. Bütschli, remarks upon the gastræa theory.—C. Gegenbaur, on the accessory tongue (*Plica fimbriala*) of man and other mammals.

Vol. ix. part 4 contains:—M. Sagemehl, contributions to the comparative anatomy of fishes, ii., some remarks upon the membranes of the brain in bony fishes.—P. Lesshaft, upon the muscles and fasciæ of the female perineum.—H. Klaatsch, contributions to a more exact knowledge of the Campanularia.—G. Baur, the carpus of the Artiodactyles: a morphogenetic study.—G. Gegenbaur, contributions to the anatomy of the mammary organs in Echidna.

SOCIETIES AND ACADEMIES

EDINBURGH

Mathematical Society, July 11.—Dr. R. M. Ferguson in the chair.—Prof. Chrystal contributed three papers on the application of the multiplication of matrices to prove a theorem in spherical geometry, on the discrimination of conics enveloped by rays joining the corresponding points of two projective ranges, and on the partition of numbers; in connection with the second of these he indicated a solution he had received in a note from Signor Cremona of Rome.—Dr. Alexander Macfarlane gave illustrations of a common error in geological calculations; and Mr. A. Y. Fraser explained two solutions (by himself and Mr. R. E. Allardice) of a problem of arrangements entitled La Tour d'Hanoï, which appeared in the *Journal des Débats* for December 27, 1883.

PARIS

Academy of Sciences, July 28.—M. Rolland, President, in the chair.—On the rule of Newton as demonstrated by Sylvester; a sequel to the two previous communications, by M. de Jonquières. Here two cases of indeterminants are dealt with: (1) That in which several consecutive terms are wanting in the equation, the absence of one or more non-consecutive terms giving rise to no uncertainty; (2) that in which one or more of the quadratic functions intervening in the operation are identically nul.—A study of the deviations of the pendulum at Fort Loreto, Puebla, Mexico, two illustrations, by M. Bouquet de la Grye. These observations were conducted by means of a multiplying seismograph set up in connection with the expedition sent out to observe the transit of Venus. Their object was

to ascertain how far the oscillations of the ground and the phenomenon of tides may be determined by the vibrations of the pendulum in volcanic and mountainous regions.—Report of the Commissioners, MM. Gosselin, Pasteur, Marey, Bert, and others on various recent communications received in connection with the present outbreak of cholera in the South of France. The Commission has examined altogether 240 communications, mostly from Spain, and either suggesting "infallible nostrums," or such remedies as are already in practice. Others recommend hypodermic injections of the nitrate of pilocarpine, arsenic, copper, phenic acid, salicylic acid, vapour of hyponitric acid, intra-venous injections of pure water, or mixed with chloride of calcium or other salts. All these methods have been tried, mostly with indifferent results, although phenic acid and the intra-venous injections seem to call for further consideration. But, speaking generally, the Commission regrets to have to report that none of the communications contain any really useful suggestions.—On a new application of electricity to the treatment of fibrous tumours of the womb, by M. G. Apontoli.—Researches on wheaten and other flours; distribution of the acid and saccharine elements in the various products of the corn-mill, by M. Balland.—Note on the analytical calculating machine invented by Charles Babbage, by General F. L. Menabrea. The author gives a full description of the machine left incompleted by the inventor. He also gives an unpublished letter of Mr. Babbage, dated August 28, 1843, and certifying that the anonymous English translation of Signor Menabrea's original account of the machine, which appeared with some brilliant accompanying explanations in the third volume of the *Scientific Memoirs*, was by Lady Ada Lovelace, only daughter of Lord Byron.—Note on the exact number of the variations gained or lost in the multiplication of the polynome $f(x)$ by the binome $x^h \pm a$, by M. D. André.—Note on the temperature and critical pressure of the atmosphere. Relation between atmospheric temperature and the pressure of evaporation, by M. K. Olzewski.—Description of a new method of directly measuring absolute magnetic intensities, by M. A. Leduc. This method, which is an application of M. Lippmann's discovery, is extremely simple and expeditious. It enables magnetic intensities to be measured in absolute unities, and is now being applied by the author to the study of a magnetic field.—Note on the combustion of explosive gases in various states of dilution, by M. A. Witz.—Note on the quantitative analysis of nitric acid by precipitation in the state of nitrate of cinchonamine. Application of this process to the quantitative analysis of the nitrates contained in natural waters and in plants, by M. Arnaud.—Note on the triacetic ether of a butylic glycerine, by M. L. Prunier.—Note on a new method of making a quantitative analysis of the dry extract of wines, by M. E. H. Amagat.—Anatomical and physiological description of *Convoluta Schultzii*, a curious animal of relatively high organisation, but in which the association with chlorophyll elements has produced some interesting physiological phenomena, by M. A. Barthélemy. Although deprived of eyes even in the rudimentary state, these worms appear to possess a sort of visual sensation. The act of breathing by absorption of carbonic acid through the cuticle also presents a striking analogy to that of submerged aquatic plants.—Fourth contribution to the history of the formation of coal, isolated carboniferous blocks, from Commentry, by M. B. Renault.—Note on the microscopic organism associated with the zooglæic tuberculosis, by MM. L. Malassez and W. Vignal.—Note on a hitherto unobserved portion of the sting of melliferous insects, and on the mechanism employed by them in expelling the venom, by M. G. Carlet.—Memoir on the geology of the Kepp district, Tunisia, one illustration, by M. P. Marès. The author determines in this district a regular superposition of the Upper Cretaceous, Eocene, and Miocene formations, a detailed study of which promises to be of great interest.—Note on the relations existing between the crystalline systems of various substances, by M. E. Mallard.

BERLIN

Physical Society, June 27.—Dr. König described a subjective optical perception of which he had repeatedly become conscious in the morning on waking from sleep and while his eyes were yet shut. On a blue-gray background he saw regular closely adjoining hexagons, like the cells of a beehive, the contours of which appeared black, while the upper sides and the outwardly adjoining sides of the hexagons had a yellow appearance interiorly, an effect produced perhaps by way of contrast to the bluish background. In the interior of each hexagon, but not exactly in the centre, and just as little uniformly in the different fields, a black point was visible. The radius of each figure was about the length of the diameter of the moon's image. In endeavouring to explain this phenomenon Dr. König thought first of the epithelial cells of the eye, which formed a similar mosaic behind the retina, and calculated the visual angle under which such a phenomenon was produced. From this calculation it appeared that these hexagons were considerably less than the subjective ones, as many as twelve epithelial cells being needed to tally with the field of the subjective figure. No other explanation of the phenomenon had yet been come upon by Dr. König.—Prof. Neesen gave a short survey of the methods that had hitherto been proposed with a view to regulating the electric current in its technical application. No method, it appeared, had yet been introduced into practice, and for the present the question turned only about proposals on points of principle. These were divisible into such as sought to regulate the energy by changing the resistance, and into such, on the other hand, as attempted this object by changing the electromotive force. The change in resistance was effected at first by means of the hand, and later in different ways automatically. The change of electromotive force in the case of dynamic machines was sought in part by regulation of the propelling steam-engine, in part by change of the magnet, in part by means of a second counteracting engine, in part by changing longitudinally the wire pulleys, and in part by opposed windings of the rolling wires. Thirdly, and lastly, it was proposed as a means towards regulating the electric current, that when the dynamic machine delivered more electricity than was used, the surplus should be diverted to the supply of an accumulator where, when the machine yielded too feeble a current, the supplementary energy required could be drawn. Prof. Neesen gave a more detailed account of some of these proposals, and concluded in favour of the last or third method, that, namely, of the transference and storage of surplus energy in an accumulator, as the most advisable of all the plans proposed from a practical point of view.

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